Trend Study 9-2-00

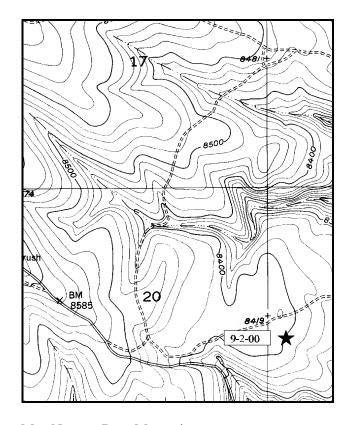
Study site name: <u>Taylor Mountain</u>. Range type: <u>Big Sagebrush-Grass</u>.

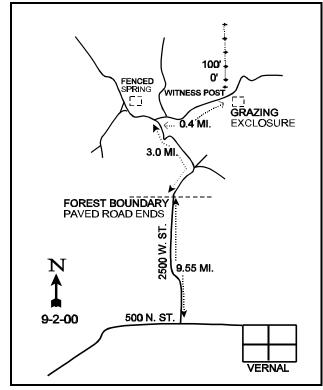
Compass bearing: frequency baseline <u>0°M</u>.

First frame placement on frequency belts <u>5</u> feet. Frequency belt placement; line 1 (14 & 82ft), line 2 (28ft), line 3 (59ft), line 4 (77ft).

LOCATION DESCRIPTION

From Vernal, travel west on 500 North Street to 2500 West. Turn right on 2500 West and drive north 9.55 miles to the National Forest boundary. Continue north 3 miles to a fork. Turn right and go 0.4 miles towards the Taylor Mountain Exclosure. From the sign on the west side of the exclosure, walk 54 paces north to the 0-foot end of the baseline. There is also a witness post 4 feet south of the 0-foot stake. It is marked by an 18 inch tall fencepost with browse tag #7091 attached.





Map Name: <u>Dyer Mountain</u>

Township <u>2S</u>, Range <u>21E</u>, Section <u>20</u>

Diagrammatic Sketch

UTM 4498233.176 N, 620580.650 E

DISCUSSION

Trend Study No. 9-2 (11-2)

The <u>Taylor Mountain</u> trend study is adjacent to the Taylor Mountain Exclosure which was built in 1962. This site can best be classified as spring-fall range. Elevation on the broad open ridge top is 8,400 feet with a gentle east facing slope of 1% to 5%. The Forest Service land on Taylor Mountain is managed in a 6-pasture rest-rotation system with grazing occurring from June 1 to September 15. The grazing unit in which the trend study is located supports about 500 AUM's during years of non-rest. A pellet group transect read along the study site baseline in 2000 estimates only 4 cow days use/acre (9 cdu/ha). Wildlife use is moderate for deer at 38 deer days use/acre (94 ddu/ha) and light for elk at 13 elk days use/acre (31 edu/ha).

Soils are a dark clay loam to loam and are moderately shallow in depth with an estimated effective rooting depth of just over 9 inches. A profile stoniness index estimated from penetrometer readings shows nearly 90% of the rocks occur within the top 8 inches of soil. Phosphorus is low at 4.5 ppm as 10 ppm may limit normal plant growth and development. Active erosion is slight due to the level terrain. Vegetation and litter cover are also excellent being estimated at 62% and 71% in 2000 respectively. Percent bare ground is relatively low at 8%.

Browse is not as critical on this site as it is not true winter range, but a dense stand of mountain big sagebrush and antelope bitterbrush are present. These species provide 64% and 28% of the browse cover respectively in 2000. Sagebrush cover is currently estimated at 26%, with an estimated density of 5,120 plants/acre. Utilization was estimated much lower in 2000 with only 10% of the population displaying moderate use and no heavy use identified. This was a significant decrease from 72% moderate use and 12% heavy use in 1995. Percent decadency increased from 4% in 1995 to 22% in 2000. However, in the past it has been as high as 19%. The proportion of decadent, dying individuals is moderate at 21% (240 plants/acre), but recruitment is currently good at 220 plants/acre. This should be adequate to replace individuals that may be lost to die-off. Vigor has been generally good in all sampling years, and even with drought in 2000, poor vigor remains low at 5%. Average leader growth is just under 5 inches in 2000, with good seed production on mature plants.

Antelope bitterbrush is also an important forage species on this site with an estimated density of 2,620 plants/acre in 1995 and 2,500 plants/acre in 2000. The population has a prostate growth form that measures only 16 inches in height. The population has generally been vigorous and healthy in the past, with utilization being determined as moderate most years. In 2000, poor vigor increased from 2% to 12%, while percent decadency increased from 3% to 30% since 1995. Recruitment is currently good at 9% (220 plants/acre). With the level of use on bitterbrush at this site (52% heavy use in 2000), it would be easy to attribute the increases in decadency and poor vigor solely on use. However, with extended drought and low annual leader growth, heavy use may have been overestimated in 2000. Drought most likely plays a major role in the current increases in decadency and poor vigor of bitterbrush. Also, the dense stand of sagebrush causes strong competition between the species, this may further increase percent decadency and poor vigor with any further drought. Use of bitterbrush was also intensified in 2000 due to the droughts effect to the herbaceous understory.

Other browse encountered on the site includes: mountain low rabbitbrush, snowberry, serviceberry and true mountain mahogany. Both serviceberry and mahogany are heavily utilized and in low abundance. Serviceberry, bitterbrush and mahogany are all more abundant inside the exclosure compared to outside. Seed production for these species appeared to be similar whether inside or outside of the exclosure. However, plant stature was much better inside the exclosure.

The herbaceous understory is diverse and moderately abundant with grasses producing over 12% cover and forbs contributing 17% cover in 2000. The dominant grasses are thickspike wheatgrass, muttongrass and bottlebrush squirreltail. Thickspike was previously not sampled, but picked up with the much larger sample

used in 1995. Forbs are exceptionally diverse with over 40 species being sampled in 1995 and 2000. Perennial forbs are dominant and include: rose pussytoes, ballhead sandwort, tapertip hawksbeard, silver lupine and rock goldenrod. Sum of nested frequency of both perennial grasses and forbs decreased slightly in 2000, mostly due to drought. However, the dense stand of mountain big sagebrush providing 26% cover is also suppressing the understory somewhat. As this is not critical winter range, some type of treatment, most likely a prescribed burn to decrease sagebrush density and cover should be considered in the future. This would help improve the abundance of herbaceous species in the understory. Grasses appeared to be more abundant and more robust inside the exclosure compared to the transect located outside the exclosure.

1982 APPARENT TREND ASSESSMENT

Both vegetative and soil trends appear stable or improving. Utilization of the key browse species is not excessive and there appears to be adequate replacement of decadent or dead plants. Herbaceous understory composition and production is fair, but there is need for improvement.

1988 TREND ASSESSMENT

An increase in percent litter cover was noted, resulting in more than 88% total ground cover in 1988. The dense vegetative cover on the site provides excellent soil protection. The slight soil movement is not significant and there is little net loss of soil. Trend for soil is up. Trend for the key browse species, mountain big sagebrush and bitterbrush, is up due to increasing population densities, good numbers of young plants, and low decadency rates. Trend for the herbaceous understory is also up due to increased quadrat frequency of grasses and forbs.

TREND ASSESSMENT

soil - up (5) browse - up (5) herbaceous understory - up (5)

1995 TREND ASSESSMENT

Soil conditions continue to improve on the site. Bare ground declined from 12% to 7%. Litter cover declined from 77% to 65%, but this trend is common during the statewide extended drought. The browse trend is stable overall, being stable for sagebrush and slightly improved for bitterbrush. Sagebrush density has declined since 1988, but the number of mature plants is relatively stable, percent decadency is low and vigor is good. The number of dead plants is relatively low (300), indicating that the change in density is partly due to the much larger sample used in 1995. Recruitment of young is moderate at 8%. The only negative aspect of the sagebrush population is the higher use reported in 1995. Antelope bitterbrush is also more heavily utilized but has increased in density, has a lower decadency rate, and has an adequate number of young plants. The herbaceous understory has remained stable since the last reading. Grasses declined slightly in sum of nested frequency, while forbs have increased slightly.

TREND ASSESSMENT

<u>soil</u> - slightly up (4)<u>browse</u> - stable overall (3)<u>herbaceous understory</u> - stable (3)

2000 TREND ASSESSMENT

Trend for soil is stable. Bare ground remains relatively low. Protective ground cover from vegetation and litter are abundant and well distributed. Trend for browse is stable although sagebrush and bitterbrush display increased poor vigor and decadence in 2000. Drought and competition, more than any other factors, likely

combined to cause increases in decadency and poor vigor for these species. Even with reduced health, these species remain at relatively stable densities. Some type of treatment such as a prescribed burn to decrease the dense stand of sagebrush and increase perennial herbaceous species should be considered in the future. The herbaceous understory slightly decreased in perennial sum of nested frequency in 2000, but has a stable trend as the most abundant perennial species remained at stable frequencies.

TREND ASSESSMENT

soil - stable (3) browse - stable (3) herbaceous understory - stable (3)

HERBACEOUS TRENDS --

Herd unit 09, Study no: 2

T y p	Species	Nested	Freque	ncy	Quadra	at Frequ	ency		Average Cover %	
e		'88	'95	'00	'82	'88	'95	'00	'95	'00
G	Agropyron dasystachyum	a ⁻	_b 157	ь171	-	-	62	63	1.12	2.01
G	Agropyron spicatum	a ⁻	_a 2	_b 7	-	-	1	3	.03	.09
G	Bouteloua gracilis	-	3	-	-	-	1	-	.00	-
G	Bromus anomalus	a ⁻	a-	_b 15	-	-	-	6	-	.52
G	Bromus tectorum (a)	-	3	-	-	-	1	-	.00	-
G	Carex spp.	a ⁻	_b 7	_b 20	-	-	4	9	.02	.41
G	Festuca ovina	3	19	15	5	2	9	9	.09	.17
G	Koeleria cristata	_b 46	_a 18	_a 5	33	18	6	2	.08	.06
G	Poa fendleriana	_{ab} 173	_a 154	_b 206	29	65	54	75	1.96	7.09
G	Poa pratensis	_b 22	_a 50	_a 12	1	8	20	5	.99	.27
G	Poa secunda	_b 77	_a 1	_a 20	48	34	1	10	.00	.24
G	Sitanion hystrix	_c 177	_b 106	_a 39	25	71	41	15	1.57	.66
G	Stipa comata	_b 90	_a 46	_a 30	9	38	15	11	.30	.62
G	Stipa lettermani	ь76	_{ab} 56	_a 28	41	34	24	12	.39	.55
Т	otal for Annual Grasses	0	3	0	0	0	1	0	0.00	0
T	otal for Perennial Grasses	664	619	568	191	270	238	220	6.58	12.74
T	otal for Grasses	664	622	568	191	270	239	220	6.59	12.74
F	Agoseris glauca	a ⁻	_{ab} 4	_b 9	-	-	2	6	.01	.10
F	Antennaria rosea	ь107	_a 59	_a 54	14	41	25	23	1.67	.99
F	Androsace septentrionalis (a)		_b 20	_a 2	1	_	9	1	.04	.00
F	Arabis spp.	_b 45	_a 16	_a 9	4	23	7	4	.06	.02
F	Arenaria congesta	_a 112	_b 216	_b 208	22	42	69	73	2.62	5.02
F	Aster chilensis	a ⁻	_b 16	_b 15			8	6	.04	.10
F	Astragalus convallarius	15	5	3	7	7	3	2	.04	.18
F	Astragalus tenellus	_	6	1	_	-	2	1	.06	.03

T y	Species	Nested	Freque	ncy	Quadra	nt Frequ	ency		Average Cover %	
p e		'88	'95	'00'	'82	'88	'95	'00'	'95	'00
F	Astragalus spp.	-	2	5	1	-	1	2	.00	.01
F	Balsamorhiza hookeri	72	72	87	54	35	37	46	.73	1.38
F	Castilleja flava	-	2	4	-	-	1	2	.00	.01
F	Castilleja linariaefolia	15	14	5	2	9	6	3	.03	.06
F	Cirsium spp.	-	3	-	-	-	1	-	.00	-
F	Collomia linearis (a)	-	_b 69	_a 12	-	-	34	6	.17	.10
F	Comandra pallida	3	4	9	5	3	2	3	.03	.01
F	Collinsia parviflora (a)	-	_b 78	_a 25	-	-	31	14	.15	.09
F	Crepis acuminata	a ⁻	ь17	ь11	-	1	7	5	1.06	.08
F	Cryptantha spp.	-	2	-	-	-	2	-	.01	-
F	Draba spp. (a)	-	1	4	7	-	1	2	.00	.01
F	Eriogonum alatum	-	1	-	-	-	1	1	.00	-
F	Erigeron eatonii	a ⁻	a ⁻	_b 50	-	-	-	24	-	.22
F	Erigeron flagellaris	_c 100	_b 42	_a 1	38	48	21	1	.13	.00
F	Erigeron pumilus	-	-	5	-	-	-	2	-	.01
F	Eriogonum racemosum	-	-	3	-	-	-	1	-	.03
F	Eriogonum umbellatum	58	63	39	23	23	28	19	.83	.75
F	Gayophytum ramosissimum (a)	-	3	-	-	-	1	-	.00	-
F	Hymenoxys acaulis	-	3	-	-	-	1	-	.03	-
F	Ipomopsis aggregata	5	4	-	-	2	2	-	.01	-
F	Lesquerella spp.	-	5	5	-	-	2	3	.01	.01
F	Lithospermum spp.	-	1	-	-	-	1	-	.00	-
F	Lomatium spp.	a ⁻	_b 19	ь17	1	-	9	9	.09	.09
F	Lupinus argenteus	_a 18	_b 80	_b 82	12	10	35	37	1.79	2.37
F	Lychnis drummondii	-	-	-	2	-	-	-	-	-
F	Mertensia spp.	a-	_b 8	a ⁻	-	-	4	1	.02	-
F	Penstemon humilis	a ⁻	_b 40	_b 14	-	-	19	7	.12	.08
F	Penstemon spp.	_c 100	_b 10	a ⁻	39	49	5	-	.02	-
F	Petradoria pumila	_b 94	_{ab} 59	_a 37	29	40	29	19	1.12	1.08
F	Phlox austromontana	_b 93	_a 23	_a 40	47	39	12	21	.10	1.22
F	Phlox longifolia	50	60	79	-	25	25	33	.32	1.31
F	Polygonum douglasii (a)	-	ь165	_a 3	-	-	58	1	.36	.00
F	Potentilla gracilis	_a 12	_b 28	_{ab} 23	14	6	16	13	.10	.11
F	Senecio debilis	_b 101	_a 33	_a 20	7	47	17	12	.08	.21
F	Sedum lanceolatum	a ⁻	_c 51	ь17	31	-	21	9	.25	.11
F	Senecio multilobatus	_	2	4	-	-	1	3	.00	.01
F	Streptanthus cordatus	-	4	-	_	_	1	-	.00	_
F	Taraxacum officinale	a ⁻	_c 33	_b 15	-	-	14	6	.15	.05

T y p	Species	Nested	Freque	ncy	Quadra	at Frequ	ency		Average Cover %	
e		'88	'95	'00	'82	'88	'95	'00	'95	'00
F	Trifolium gymnocarpon	_a 14	_b 131	_b 109	19	5	49	45	.54	1.13
F	Unknown forb-annual (a)	-	_b 8	a ⁻	-	-	3	-	.01	-
F	Unknown forb-perennial	ь11	a ⁻	a ⁻	-	5	-	-	-	-
F	Zigadenus elegans	a-	_b 14	_b 11	-	-	8	5	.05	.19
To	otal for Annual Forbs	0	344	46	8	0	137	24	0.75	0.21
To	otal for Perennial Forbs	1025	1152	991	371	459	494	445	12.23	17.09
To	otal for Forbs	1025	1496	1037	379	459	631	469	12.99	17.31

Values with different subscript letters are significantly different at % = 0.10

BROWSE TRENDS --

Herd unit 09, Study no: 2

T y p	Species	Strip Freque	ncy	Average Cover 9	
e		'95	'00	'95	'00
В	Amelanchier alnifolia	1	1	.00	.15
В	Artemisia tridentata vaseyana	91	94	22.71	26.12
В	Cercocarpus montanus	2	2	.15	.38
В	Chrysothamnus viscidiflorus lanceolatus	24	18	.60	1.22
В	Purshia tridentata	75	70	14.75	11.55
В	Symphoricarpos oreophilus	11	14	.56	1.50
Т	otal for Browse	204	199	38.78	40.95

BASIC COVER --

Herd unit 09, Study no: 2

Cover Type	Nested Frequen	су	Average	Cover %)	
	'95	'00	'82	'88	'95	'00
Vegetation	381	360	11.00	7.25	50.54	61.97
Rock	53	21	.50	.75	.58	.13
Pavement	123	102	4.25	3.25	2.70	1.94
Litter	399	387	63.75	77.25	65.15	71.75
Cryptogams	48	47	0	0	1.87	1.22
Bare Ground	122	149	21.00	11.50	6.45	7.75

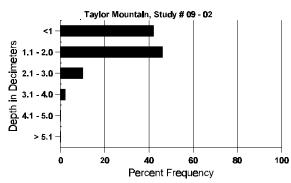
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SOIL ANALYSIS DATA --

Herd Unit 09, Study # 2, Study Name: Taylor Mountain

Effective rooting depth (inches)	Temp °F (depth)	pН	%sand	%silt	%clay	%0M	РРМ Р	РРМ К	dS/m
9.53	55.0 (11.81)	7.2	37.4	36.0	26.6	5.0	4.5	153.6	1.3

Stoniness Index



PELLET GROUP FREQUENCY --

Herd unit 09, Study no: 2

Type	Quadra Freque	
	'95	'00
Rabbit	2	6
Elk	8	3
Deer	21	20
Cattle	3	-

Pellet T	ransect
Pellet Groups per Acre '00	Days Use per Acre (ha) '00
104	N/A
165	13 (31)
505	39 (96)
44	5 (9)

BROWSE CHARACTERISTICS --

Herd unit 09, Study no: 2

		nit 09 , :													1		1
A		Form C	Class (I	No. of	Plants	3)					Vigor C	lass			Plants	Average	Total
G	R														Per Acre	(inches)	
Е		1	2	3	4	5	6	7	8	9	1	2	3	4		Ht. Cr.	
Α	mela	nchier a	alnifoli	ia													
-	_			···													Γ.
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	95	-	-	-	-	1	-	-	-	-	1	-	-	-	20	31 43	
	00	-	-	-	-	-	1	-	-	-	1	-	-	-	20	30 28	1
%	Plar	nts Shov	ving	Mo	derate	Use	Hea	avy Us	e	Po	or Vigor				(%Change	
		'82	_	009			009)%	•			-	<u></u> _	
		'88'		00%			009)%						
		'95		100			009)%				-	+ 0%	
		'00'		00%			100)%						
Т	otal I	Plants/A	cre (e	xcludir	ıg Dea	ad & S	eedlir	igs)					'82		0	Dec:	_
			(0			6-7					'88		0		_
													'95		20		_
													'00		_		
_			4.4.										-		20		
_	_	isia trid	entata	vaseya	ına												_
S		4	-	-	-	-	-	-	-	-	4	-	-	-	266		4
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	95	8	-	-	1	-	-	-	-	-	9	-	-	-	180		9
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2
Y	82	18	_	_	_	_	_	_	_	_	18	_	_	_	1200		18
1	88	14	1	_	_	_	_	_	_	_	15	_	_	_	1000		15
	95	14	5	_	_	_	_	_	_	_	19	_	_	_	380		19
	00	11	-	_	_	_	_	_	_	_	11	_	_	_	220		11
M	82	31	8	-	-	-	-	-	-	-	39	-	-	-	2600	23 29	39
	88	60	9	1	-	-	-	-	-	-	70	-	-	-	4666	23 26	
	95	22	156	24	-	-	-	-	-	-	202	-	-	-	4040		202
	00	163	15	-	9	2	-	-	-	-	187	2	-	-	3780	27 37	189
D	82	13	_	_	-	_	_	_	_	_	10	3	-	-	866		13
	88	11	2	_	-	_	_	_	_	_	13	_	-	-	866		13
	95	_	6	4	_	_	_	_	_	_	9	_	_	1	200		10
	00	43	9	_	3	_	_	1	_	_	44	_	-	12	1120		56
X	82													_	0		0
Λ	88	_	-	-	-	-	-	-	-	-	Ī -	-	-	-	0		0
	95	_	-	-	-	-	-	-	-	-	_	-	-	-	300		15
	95	_	-	-	-	-	-	-	-	-	-	-	-	-	300		15
		_		-	-	-			-	-		-	-	-			13
%	Plar	nts Show			derate	<u>Use</u>		avy Us	<u>e</u>		oor Vigor	-				%Change	
		'82		119			009)%					+29%	
		'88'		129			019)%					29%	
		'95		729			129				3%				-	+10%	
		'00')	10%	6		009	6		05	5%						
To	otal I	Plants/A	cre (e	xcludir	ng Dea	ad & S	eedlir	ngs)					'82		4666	Dec:	19%
													'88		6532		13%
													'95		4620		4%
													'00		5120		22%

E		Y R	Form Cl	ass (N	lo. of	Plants)					Vigor C	lass			Plants Per Acre	Average (inches)		Total
M 82			1	2	3	4	5	6	7	8	9	1	2	3	4				
88	C	erco	carpus mo	ontanı	ıs													-	
95	M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
% Plants Showing			-	-	-	-	-	-	-	-	-	-	-	-	-			-	0
% Plants Showing			-	-	2	-	-	2	-	-	-		-	-	-				2
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Total Plants/Acre (excluding Dead & Seedlings)	/0	1 Iui		iiig			030			<u>,,,</u>			_			-	70 Change		
Total Plants/Acre (excluding Dead & Seedlings) 100																			
Total Plants/Acre (excluding Dead & Seedlings) 182																-	+ 0%		
188 0			00		00%	0		100	1 %0		U	J%0							
Y 82 9	Т	otal I	Plants/Ac	re (ex	cludin	g Dea	ad & S	eedlir	ngs)								Dec:		-
Chrysothamnus viscidiflorus lanceolatus Y 82 9 - - - - - - - - -																			-
Chrysothamnus viscidiflorus lanceolatus Y 82 9 9 600 988 16 1066 16 95 16 1066 16 95																			-
Y 82 9	C	rve	othamnue	vicci	diflor	ic land	ceolatu	ıc						00		40			_
88	_			VISCI	umort	is land	Coract	15				0				600		T	0
95	1			-	-	-	-	-	-	-	-		-	-	-				
M 82		95		-	-	-	-	-	-	-	-		-	-	-	0			0
88		00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
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